

Molarity

As is clear from its name, molarity involves moles. Boy, does it!

The molarity of a solution is calculated by taking the moles of solute and dividing by the liters of solution.

$$\text{Molarity} = \frac{\text{moles of solute}}{\text{liters of solution}}$$

This is probably easiest to explain with examples.

Suppose we had 1.00 mole of sucrose (it's about 342.3 grams) and proceeded to mix it into some water. It would dissolve and make sugar water. We keep adding water, dissolving and stirring until all the solid was gone. We then made sure that when everything was well-mixed, there was exactly 1.00 liter of solution.

What would be the molarity of this solution?

$$\text{Molarity} = \frac{1.00 \text{ mol}}{1.00 \text{ L}}$$

The answer is 1.00 mol/L. Notice that both the units of mol and L remain. Neither cancels.

A replacement for mol/L is often used. It is a capital M. So if you write 1.00 M for the answer, then that is correct.

Some textbooks make the M using italics and some put in a dash, like this: 1.00-*M*. When you handwrite it; a good, old block capital M is just fine.

When you say it out loud, say this: "one point oh oh molar." You don't have to say the dash.

And never forget this: replace the M with mol/L when you do calculations. The M is just shorthand for mol/L.
